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Building Trust in Data Linkage: A Framework for Quality Assurance and Governance

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Objectives

Data linkage is crucial for research, healthcare, and policymaking, yet it is often treated as a purely technical process rather than a modelling challenge. This abstract introduces a **Quality Assurance Framework for Data Linkage** to ensure appropriate governance, transparency, and methodological rigor while balancing privacy, ethics, and public trust.

Methods

We developed a structured Quality Assurance Framework by reviewing existing data linkage practices, engaging with stakeholders, and identifying key challenges. The framework categorizes quality assurance into four stages: **Preparation**, **Implementation**, **Evaluation**, and **Overall Considerations**. Each stage includes essential activities such as data profiling, parameter configuration, uncertainty management, and ethical oversight. A set of triage questions helps determine the appropriate level of quality assurance required based on project type, data sensitivity, and intended use. The framework was iteratively refined through expert consultation and case study analysis to ensure practical applicability in diverse data linkage scenarios.

Results

The framework provides a **structured, risk-based approach** to quality assurance in data linkage, supporting **transparent decision-making** and **improving trust** among data users and the public. It highlights the importance of **early-stage assessment**, ensuring that data quality, privacy considerations, and governance requirements are embedded from the outset. Case studies demonstrate that applying the framework enhances data integrity, reduces errors, and strengthens ethical oversight. The structured triage questions help stakeholders establish **minimum expected quality levels** based on project risk and complexity. Additionally, the framework serves as a **documentation tool**, improving accountability and compliance with regulatory standards. Overall, it fosters a culture of responsible data linkage, ensuring that downstream applications—such as research, statistics, and direct care—rely on

high-quality, ethically managed linked data.

Conclusion

By embedding structured quality assurance in data linkage, we improve data integrity, transparency, and public trust. The framework equips practitioners with practical tools for risk assessment, governance, and ethical oversight. It promotes responsible data practices, ensuring that linkage decisions are well-documented, justified, and aligned with privacy-preserving principles and stakeholder expectations.



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